Al-Anbar Medical Journal

Official Journal of Medical College / University of Anbar

Anb Med J

Vol.12 No.1 2015

ISSN: 2070 - 8882

Contents

Volume 12 , Number 1 , December 2015

Effect of Life Style on Weight in a Sample of Early Adulthood from Falluja Secondary Schools.

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Abstract:

Background: Weight and its problems have become of great interest nowadays and many researches are aiming to study how weight would affect a person's life. Many researches reached to a conclusion that life style has a an important role to play on weight and it is known that at early adulthood, the impact of weight will determine whether this person will have a healthy or unhealthy, troublesome life.
Aim of Study: The purpose of this study was to assess how life style and daily habits would affect young adults weight .
Methodology : A cross-sectional study was carried out from March to May 2013 in the City of Falluja , involving secondary school students 15-18 years of age . A simple random sampling was used to select 4 secondary schools out of 11 secondary schools in falluja city center . a systematic random sampling was used to draw a sample of 396 out of 2650 secondary students enrolled in 4 secondary schools .
A questionnaire was applied containing several questions about lifestyle variables, for each individual , height and weight were measured and BMI was calculated .A total of 396 students 15-18 years age 185(46.71%) males and 211(53.28%) females were examined .The variables in questionnaire form and methods used by the investigator were explained briefly to all students in the sample. The data were evaluated using chi-square test . Differences where considered statistically significant at $p < 0.05$.
Results: About 7.07% of the students were overweight ,89.39% were normal weight , 3.53% were under weight, the study showed that there was a statistically significant association of weight with between gender(p value 0.001), number of meals(p value 0.000),breakfast(p value 0.005), Sweet cold drinks(p value 0.004), physical activity(p value 0.04), sleeping hours(p value 0.001) and, but no significant association between smoking(p value 0.08) , type of feeding during infancy(p value 0.79) and weight.
Conclusions: The results of this study suggest that the weight problems are not major problem within adolescents in Falluja students in secondary schools , however , abnormal BMI is found to be related to certain variables of lifestyles which were studied , including : number. of meals having a breakfast, cold drinks , sleeping hours, physical activity . Health professionals , teachers , and family environment may play a key role in the promotion of a healthy lifestyle.
Key wards: Lifestyle, obesity, adulthood

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Introduction:

Early adulthood or adolescence is one of the fastest growth periods of a person's life. During this time , physical changes affect the body's nutritional needs, while changes in one's lifestyle may affect eating habits and food choices .Physical activity and diet are known to be the major lifestyle /environmental factors that are associated with obesity [1] . Overweight is generally defined as having more body fat than is optimally healthy. Being overweight is a common condition, especially where food supplies are plentiful and lifestyles are sedentary. Excess weight has reached epidemic proportions globally, with more than 1 billion adults being either overweight or obese. Increases have been observed across all age groups [1].

A healthy body requires a minimum amount of fat for the proper functioning of the hormonal, reproductive, and immune systems, as thermal insulation, as shock absorption for sensitive areas, and as energy for future use. But the accumulation of too much storage fat can impair movement and flexibility, and can alter the appearance of the body[3].

Underweight can be a primary causative condition or might be secondary to or symptomatic of an underlying disease. Unexplained weight loss may require professional medical diagnosis([2].

Severely underweight prone individuals may have poor physical stamina and a weak immune system, leaving them open to infection. According to Robert E. Black of the Johns Hopkins School of Public Health, "Underweight status and micronutrient deficiencies also cause decreases in immune and non-immune host defenses, and should be classified as underlying causes of death if followed by infectious diseases that are the terminal associated causes[3] .

People who are malnutrative and underweight raise special concerns, as not only gross caloric intake may be inadequate, but also intake and absorption of other vital nutrients, especially essential amino acids and micro-nutrients such as vitamins and minerals[3,4].

In women, being grossly underweight can result in amenorrhea (absence of menstruation), infertility and possible complications during pregnancy. It can also cause anemia and hair loss. Underweight is an established risk factor for osteoporosis, even for young people. This is a particular insidious consequence, because the affected persons do not notice the danger. After the occurrence of first spontaneous fractures the damage is often already irreversible ([5,6].

Being underweight causes increased mortality at rates comparable to that seen in morbidly obese people [7].

On the other hand, obesity is a medical condition in which excess body fat has accumulated to the extent that it may have an adverse effect on health, leading to reduced life expectancy and/or increased health problems.([2,3] Body mass index (BMI), a measurement which compares weight and height, defines people as overweight (pre-obese) if their BMI is between 25 and 30 kg/m2, and obese when it is greater than 30 kg/m2 [5].

Obesity increases the likelihood of various diseases, particularly heart disease, type 2 diabetes, obstructive sleep apnea, certain types of cancer, and osteoarthritis [5]. Obesity is most commonly caused by a combination of excessive food energy intake, lack of physical activity, and genetic susceptibility, although a few cases are caused primarily by genes, endocrine disorders, medications or psychiatric illness. Evidence to support the view that some obese people eat little yet gain weight due to a slow metabolism

is limited; on average obese people have a greater energy expenditure than their thin counterparts due to the energy required to maintain an increased body mass[5,6].

Anti-obesity drugs may be taken to reduce appetite or inhibit fat absorption together with a suitable diet. If diet, exercise and medication are not effective, a gastric balloon may assist with weight loss, or surgery may be performed to reduce stomach volume and/or bowel length, leading to earlier satiation and reduced ability to absorb nutrients from food[7,8]

Obesity is a leading preventable cause of death worldwide, with increasing prevalence in adults and children, and authorities view it as one of the most serious public health problems of the 21st century(9) .Obesity is stigmatized in much of the modern world (particularly in the Western world), though it was widely perceived as a symbol of wealth and fertility at other times in history, and still is in some parts of the world ([3,10]. .No previous studies have been conducted in this aspect in west of Iraq.

Thus the aim of the study is to reveal how life style and daily habits would affect young adults' weight (15-18 years) of age.

Methodology:

A cross-sectional study was conducted among secondary school students in Falluja City from March to May 2013. Permission for conducting this study was obtained from ethical comitte and falluja Directorate of Education . Oral consent also obtained from each student involving in the study . Structured questionnaire was distributed to 635 females and males in Al-Falluja secondary schools,2 schools for males and 2 schools for females 396 completed forms were obtained. the questionnaire included several questions regarding their daily habits to estimate how life style factors would affect the weight .the variables in questionnaire form and methods used by the investigator were explained briefly to all students in the sample .The information in the data collecting tool includes : the sex , smoking status, number of qualitative meals per/ day , level of physical activity according to the criteria of IPAQ form considered as follows[30], mild physical activity is the lowest level which includes activities at work, and walking from home to school and other walking that might be done solely for recreation , sport , exercise, or leisure for at least 10 minute per day. Moderate physical activity includes activities such as , play football, bicycles' , basketball ,that achieve a minimum total physical activity of at least 600 MET (MET = Kcal/Kg h)minutes /week. MET value can be calculated according to the following equation, MET-minutes /week = 4.0 * moderate intensity activity minutes * moderate –intensity days .while sever physical activity includes left heavy materials ,or 2 sports from moderate physical activities , vigorous-intensity activity that achieve a minimum total physical activity of at least 1500-3000 MET-minutes/week. For normal physiological patterns of sleep , Adolescents require at least (in general 8.5-9.25 hours each night)[29]. A tape measure and a weighing scale were used to estimate the height and weight and calculated the BMI for each student according to the formula: BMI=Wt (Kg)/Ht (m^2). Over weight was considered BMI>26 , normal weight BMI=18.5-25 , underweight BMI<18.5 .

Statistical analysis : The collected data was analyzed using SPSS ver.16, Chi-square test used , P value less than 0.05 was considered as the level of significance.

Results :

The total sample (396 students) data were completed and available for analysis. From this study the following percentages were calculated.

(Table 1 shows the distribution of the study sample regarding the gender. Males represent 44.19% of the total study sample, of which 12.57 % were overweight, 0 % were underweight and 87.4 % were of normal body weight. Females represent 55.8 % of the total study sample, of which 2.7% were overweight, 6.3 % were underweight and 90.95 % were of normal body weight.

Percentage of overweight from total sample 28(7%). Percentage of normal weight from total sample 354(89.4%), for underweight 14 (3.5%). A significant statistical association between weight and gender (p value 0.001)was found.

Table 1. Frequency distribution of students weight according to gender

	Male		Female			
	No.	%	No.	%	No.	%
Over weight	22	(12.6	6	(2.7)	28	(7.1)
Normal weight	153	87.4)	201	(91)	354	)89.4)
Under weight	0	(0)	14	(6.3)	14	(3.5)
Total	175	(44.2)	221	(55.8)	396	100

df . 1 p value= 0.001 chi=24.64

Table 2 : shows that out of 396 students, only 22 students were smokers and they were all males. They represented 6% of the total study sample. Foure out of these 22 students were overweight and they represented (18.2 %) of the smokers. there was no association between smoking and weight which means that weight decreases with smoking , this was no statistically significant (p value 0.08).

Table:2 frequency distribution of weight according to smoking state .

	Smokers		Non smokers		Total	
	No.	%	No.	%	No.	%
Over weight	4	(18.2)	24	(6.4)	28	(7.1)
Normal weight	18	(81.8)	336	(89.8)	354	(89.4)
Under weight	0	0	14	(3.8)	14	(3.5)
Total	22	(6)	374	(94.4)	396	100

df 2 p value= 0.08 chi= 5.04

Table 3: shows a borderline significant association between having breakfast and weight(p value 0.005).

from this study 52% have breakfast, 48 % have no breakfast of which 4.7% and 10 % have over weight respectively.

Table 3: Frequency and distribution between weight and breakfast .

	Breakfast		No breakfast		Total	
	No	%	No	%	No	%
Over weight	9	(4.7)	19	(10)	28	(7.1)
Normal weight	194	(94.2)	160	(84.2)	354	(89.4)
Under weight	3	(1.45)	11	(14.1)	14	(3.5)
Total	206	(52)	190	(48)	396	100

df 2 p value 0.005

Table (4): shows the relation between weight and the number of meals. This Table shows that there was a statistically significant relation between the weight and the number of meals per day p value= 0.000. The weight increases when the no. of meals increases, .(10 students out of 49 (20.4%)who had more than 3 meals and food between meals were overweight.

Table (4): frequency and distribution between Weight and the no. of meals.

	2 meals No %	3meals No %	>3meals No %	Have food between meals No %	**Total** No %
Over weight	2 (1.2)	16 (8.6)	4 (33.3)	6 (16.2)	28 (7.1)
Normal weight	149 (92.6)	166 (89.2)	8 (66.7)	31 (83.8)	(354 89.4)
Under weight	10 (6.2)	4 (2.2)	0 0	0 0	14 (3.5)
Total	161 (40.7)	186 (47.0)	12 (3.01)	37 (9.3)	396 100

df 3 p value 0.000

Table5: shows that there was a positive association between weight and sleeping hours, it is clear that increasing sleeping hours is associated with increased body weight. And this relation is statistically significant.(p value 0.001).About16.4 % of total students had sleep hours more than 9 , of which 29.2% were overweight)

Table :5 frequency distribution between sleeping hours and weight .

	< 9 hours No %	9 hours No %	>9 hours No %	Total No %
Over weight				
Male	2 (1.5)	4 (2)	16 (24.6)	22 5.6
female	1 (0.7)	2 (1)	3 (4.6)	6 1.5
Normal weight				
Male	47 (34.8)	84 (42.9)	22 (33.9)	153 38.6
Female	76 (56.3)	102 (52.1)	23 (35.4)	201 50.8
Under weight				
Male	0 0	0 0	0 0	0 0
female	9 (6.7)	4 (2.04)	1 (1.5)	14 3.5
Total	135 (34.1)	196 (49.5)	65 (16.4)	396(100%)

df 4 p value 0.001

Table 6 illustrates a positive association between weight and average daily physical activity .272 (68.6%) of the students have experience mild physical activity , 114(28.8%) had moderate physical activity and 10(2.5%) had heavy activities. (p value 0.04).

Table (6): distribution of physical activity according to weight .

	Mild No %	Moderate No %	Sever No %	Total No %
Over weight				
Males	18 (6.6)	4 (3.5)	0 0	22 5.6
females	6 2.2	0 0	0 0	6 1.5
Normal weight				
Males	55 (20.2)	88 (77.2)	10 (100)	153 38.6
females	182 66.9	19 16.7	0 0	201 50.8
Under weight				
Males	0 0	0 0	0 0	0 0
females	11 (4.1)	3 (2.6)	0 0	14 3.5
Total	272 (68.7)	114(28.8	10 (2.5)	396 100

df 2 p value 0.04

Table 7 shows that breast feeding during infancy has no association with body weight in adolescence, from this study 12 (6.3%) 8 (8%) ,and 8 (7.8%) had over weight with breast feeding , bottle feeding , mixed feeding respectively .

Table (7) : frequency and distribution between feeding during infancy and weight .

	Breast feeding No %	Bottle feeding No %	Mixed feeding No %	Total No %
Male				
Over weight	9 (4.7)	7 (6.8)	6 (5.8)	22 (6)
Normal weight	75 (39.5)	41 (39.8)	37 (35.9)	153 (38.6)
Under weight	0 0	0 0	0 0	0 0
Female				
Over weight	3 (1.6)	1 (1.0)	2 (2.0)	6 (1.5)
Normal weight	98 (51.6)	49 47.6	54 (52.4)	201 (50.8)
Under weight	5 (2.6)	5 (4.8)	4 (3.9)	14 (3.5)
Total	190 (48)	103 (26)	103 (26)	(396) 100

df 4 p value 0.797

Table 8 shows that there's a statistically significant association between consumption of cold drinks and weight in adolescence , 22 (14%) were overweight and drink sweet cold drinks frequently , while 6(2.5%) were overweight and drink infrequently during and between meals . (p value 0.04)

Table (8): frequency and distribution between Weight and sweet cold drinks consumption between and during meals

	Frequently No	%	Infrequently No	%	Total No	%
Males						
Over weight	18	(11.5)	4	(1.7)	22	(5.6)
Normal weight	61	(38.9)	92	38.5	153	38.6
Under weight	0		0		0	0
Females						
Over weight	4	(2.5)	2	(0.83)	6	(1.51)
Normal weight	65	(41.4)	136	(56.9)	201	(50.8)
Under weight	9	5.73	5	(2.1)	14	(3.53)
Total	157	(39.6)	239	(60.4)	396	100

Discussion

As it is known to everyone, weight is one of the biggest concerns busying the mind of adolescents worldwide. Weight and its problems can affect the outcome of individuals and their evolution. The present study , tried to collect the most important life-style factors and studied their relationship with weight and how would they affect weight in each individual.

The study showed that there was a statistically significant association between gender and weight (p value 0.001) , out of 175(44.19%) male of total sample students, (12.57%)of total male sample happened to be overweight (BMI > 25) compared to overweight of female sample) .So from the findings above we find that males are more prone to become overweight than female. similarly , the percentage of overweight was found to be higher in males than in females in other countries (24,25).The lower rate of over weight among females students is expected because females are more cautious about their weight status than males due to society perceptions that encourage females to be slender. Disagreement of this results with studies conducted among adolescent Tehran and Egyptians students where the percentage of overweight among females students was found to be higher than among males[20,29]. But it's a little startling to see statistics from the United Arab Emirates, In percentile classification normal weight 5th to <85th percentile and overweight>95th percentile. The percentile difference between overweight UAE men and women is 2.8% (more women being overweight) but it is the percentile difference for obesity that is significant. It This means that a greater percentage of UAE women are overweight and obese as compared to their men. Egyptian women fare worse as this is another place with wide gender differences when it comes to overweight and obesity, wider than that of the UAE. And like the UAE, in Egypt too it is the women who lead the score. 9.7% for overweight and 23.5% for obesity. [26].

Out of the 396 students, only 22 students were smokers and they are all males. They represent (5.6 %) of the total study sample, for 4(18.2%) out of these 22 students were overweight and smokers. There was a negative correlation between smoking and weight which means that weight decreases with smoking , this was statistically no significant (p value 0.08).

This result was incompatible with a research results done by (WHO in 2002 ([34]) , data indicated that smokers weight less than nonsmokers and that weight gain occurs after the cessation of smoking. The popular wisdom is that this is due to differences in caloric intake: smokers weigh less because they consume less and they gain weight upon stopping smoking as a consequence of consuming more.

Table 3 :shows the significant association between having breakfast and weight(p value 0.005) . Adolescents having no breakfast daily are more over weight than others having it . This result disagree with several studies which identified a possible role for breakfast consumption in maintaining normal weight status in children and adolescent , which have many important public health implication [(22),] also results disagree with other which studies observed that skipping breakfast was associated with high risk of obesity [(27).]

It was also found that there was a positive association between number of meals and weight(p value=0.000), overweight was associated with increased meals/day (8.6% of them eat 3 meals , and the largest proportion (33.3%) were found to eat 3 or more meals / day , 16.2%)were found to eat between meals. The weight gain could also be due to the consumption of large quantities of snacks while watching television and during school hours [(22)] .

This result interfere with that found in the minnesota's adolescents who participated in regular family meals. In their research found that eating >3 meals/day was significantly negatively related to being overweight, also when controlling for potential confounding factors[(35).] From the present study those who have food between meals were 37 (9.3%). This agree with study in European found that , the food pattern was characterize by irregularity of meal consumption.

Although snacks can be a source of needed nutrients , it is important that they do not substitute for regular meals.

Snacking is an established eating pattern among adolescents worldwide ([36).]

The study showed that there was a positive association between sleeping hours and weight,(p value=0.001) , increased sleeping hours was associated with increased BMI and vice versa , this is statistically insignificant. Out of the 28(7.07%) over weight students , 19(29.2%) were sleeping for more than nine hours/day,(3.6%)and (2.12%) were sleeping for 9 and <9 hours respectively.

Among those 14 underweight students 9 (6.66 %) were found to sleep less than nine hours.4(2.04%)and 1(1.53%) are sleeping for 9 and >9 hours respectively .

These statistics would draw an image that sleeping less than nine hours is found to be associated with underweight and while sleeping more than nine hours will be associated with overweight. But these results disagree with a study held in USA ,showed that a short sleep duration hours had significant association with over weight [(14).]

Another study showed that more sleep in adolescence may help prevent over weight and obesity so increase sleep from 8to 10 hours at age 18 predicted a reduction in the proportion of adolescents >25 kg/m2 by 4[%(15).] But these results interfere with a study held in Chicago by doctors , In the Chicago study, doctors measured levels of leptin and ghrelin in 12 healthy adults They also noted their hunger and appetite levels. Soon after, the men were subjected to two days of sleep deprivation followed by two days of extended sleep. During this time doctors continued to monitor hormone levels, appetite, and activity, so when sleep was restricted, leptin levels went down and ghrelin levels went up. Not surprisingly, the men's appetite also increased proportionally.

Their desire for high carbohydrate, and calorie-dense foods increased by a whopping 45% (29).anther study showed that sleep less than 9 hours or sleep inequality significant association with overweight[13].

so there's positive association between physical activity and weight, decrease physical activity associated with obesity (p value 0.04). Expert believe this rise in obesity is due to lack of physical activity and an increase in the amount of fast food and junk food available to adolescents. staying active and eating food , that are low in fat and sugar promote a healthy weight for teens.([34, 33].

Results in Table 7 showed that there was no association between the type of feeding during infancy and weight during adolescence .

The above results were statistically not significant (p value 0.797), these findings disagree with an aspect of a study that show that breast feeding is associated lower prevalence of obesity and lower prevalence of underweight [31].Although a protective effect of breast feeding on levels of adiposity in later life is biologically plausible [32] , our results suggest that , over all breast feeding is associated with at most a small effect on BMI in adolescences and adult life.

This present study showed that 22(14%) out of 157 having frequently consumption of sweet cold drink and overweight compared to 6(2.5%) out of 239 having infrequently consumption of sweet drink and overweight .In above results found that there was a positive association between consumption of cold drinks and weight , consumption of cold drinks was associated with increased weight and this was statistically significant (p value 0.04) , these finding agreement with a study showed that the consumption of sweet drinks has been linked to over weight ([16].

This study , has many limitation. First of all , using the food frequency questioner may be confusing for students , especially questions related to eating habits , snacks and continuity of having breakfast , sleeping hours and level of physical activity , second , this present study has focused on secondary schools students in urban area rather than rural area in Fallujia. Another limitation is the difficulty to collect a big sample due to security conditions at the time . A case-control study is better recommended in future .

Conclusions:

From the results , weight problems are not major problem within adolescents in falluja students , however , abnormal BMI was found to be related to certain variables of lifestyles which were studied in this research , including : number of meals , cold drinks , sleeping hours and, physical activity .

Recommendations:

Number of meals per day is recommended to be 3 meals only, which is found to be associated with normal BMI. Number of sleeping hours per day is better to be 9 hours as a median, which is also associated with typical BMI .Smoking to be quitted,. Encouragement of mothers to breast feed their babies and avoiding bottle feeding. Cold drinks containing sugars and its derivatives to be lessened or avoided. More researches to be done including a wider area and a larger study sample.

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المحتويات
المجلد ١٢ ، العدد ١ ، كانون الأول ٢٠١٥

مجلة الأنبار الطبية

تصدر عن كلية الطب / جامعة الانبار

Anb Med J

المجلد الثاني عشر - العدد الاول ٢٠١٥

ISSN: 2070 - 8882